experiments three parcels of woollen strips, which were left for fourteen hours in a solution of alum, without being washed in water.

A bath was then prepared in a boiler, containing two hundred quarts of water and eight pounds of mulberry wood cut in large pieces, which was boiled for an hour until the liquor acquired a yellowish brown colour. In the mean time the strips were washed with water, and each parcel was dyed separately in a bath of the same proportions.

The operation was begun at a temperature of 50 degrees of Reaumur, by increasing the fire at the end of ten minutes, and five minutes afterwards increasing it still more, without, however, pushing it to ebullition. By this method a very fine yellow colour was obtained.

The first parcel of strips treated with alum, took a fine citron yellow; the second treated with salt of tartar was a greenish yellow; and the third treated with muriate of tin took a golden yellow, which surpassed in beauty the two other colours. Thus six pounds of woollen strips were dyed with eight pounds of the mulberry wood.

In order to ascertain whether this wood could be substituted for the yellow Brazil wood, it was employed with a solution of indigo made with sulphuric acid, which had served for making Saxon green. For this purpose a parcel of strips were boiled for an hour in some alum water; they were then taken out, and a linen bag containing eight pounds of the mulberry wood was put into the liquor while still boiling, and the boiling continued for another hour. A very fine straw-coloured yellow was the result: by adding a little indigo dye, and putting the strips in for a quarter of an hour, they acquired a very agreeable sea-green: afterwards, on adding a fresh portion of indigo, the green shade almost entirely disappeared. Then, to saturate the acid, a good portion of white chalk was put into the same bath, and a very fine green colour was obtained.

By means of a fresh decoction of this wood, and by employing the known processes, the author obtained at pleasure all the different shades of green. This wood may even be substituted for Brazil wood in dyeing scarlet, to which it gives a lustre that approaches to a yellow.

A new method of transporting with facility and expedition the Earth and Rubble in forming Banks, Ditches, &c.

(From Magazin der Erfindungen.)

A German agriculturist having to raise a bank in a short time, invented the following method of carrying the earth, in preference to the use of wheel-barrows or carts; which appears very ingenious, and which besides saving time, is less expensive, and requires fewer hands.

He raises two strong posts, leaving between them a space of 30 metres, and stretches tightly from one to the other an inclined cord along which a bucket of earth is to descend; the height of the bucket determines the inclination of the cord, one end of which is attached to the first post, three metres and a half high, and the other to the second post, so that the bucket cannot touch the ground and be arrested in its course.

The inclined cord carries a muffle furnished with a double hook, to which the bucket is suspended; the pulley, the diameter of which is small, should have a very deep groove, in order that it may not turn on the cord when the bucket is raised, and that it may be constantly maintained in a vertical position.

Several pullies may be placed on the cord, to which any number of buckets may be suspended, provided it is strong enough to sustain them. When the buckets arrive at the end of their course they are unhooked and emptied. In order to take them back again two other posts are fixed, and a cord stretched from one to the other, and inclined in a direction opposite to the first; the muffle is detached and placed on this cord, and as soon as the bucket is suspended on the hook, by giving it a slight push, it runs in the direction of the cord to its destination.

Where it is required to remove the materials to a greater distance, the posts may be placed further off, or several may be fixed at successive distances, so that the buckets may be brought to the desired situation by unhooking them from one side and suspending them from the other. It requires two men to fill the bucket and hook it to the pulley; one is sufficient to unhook and empty it.

This method is economical, because fewer hands are required than when wheel-barrows are used, which are besides subject to the inconvenience, that when the

ground is soft, or after rain, the wheels often sink very deep into it, which very much delays the work.

Description of a process by which all kinds of Liquids may be Evaporated at six times less Expence than by any known process; by M. Curaudau.

(From the Annales des Arts and Manufactures.)

Among the different methods that have been practised or taught for concentrating the juice of the grape, some are attended with the inconvenience of injuring it during the concentration, and others are much too expensive, or are not simple enough to be adopted with advantage.

It occurred, therefore, to me, that a process which should be free from the above inconveniences, and at the same time should unite the advantages of economy and simplicity, would be the more favourably received, as it would greatly contribute to the prosperity of various establishments.

The process is founded on the well-known principle, that air, at the temperature of 10 degrees of Reaumur, and which is saturated with moisture, acquires again the property of dissolving water according to the different degrees of heat by which it is successively tried. To apply this principle to the evaporation of liquids, it requires,

1st. That a large volume of air be heated at a small expense.

2d. That the air be renewed in proportion as its dissolving and dessicative action is exhausted.

3d. That the greatest surface possible be given to the liquids that are to be concentrated.

4th. That no mechanical means be employed, nor any expensive manipulation, either to bring the liquid to the desired degree of concentration, or to collect it when it arrives at the last point of evaporation.

These four conditions are complied with in this new process.

In order that the description of the apparatus may be understood, it is sufficient to represent a square place, five metres on each side, by fifteen metres in height. Within this square, at about seven centimetres distance, are suspended cloths which are wetted with the liquid that is to be evaporated; below each cloth, in a parallel direction, are small gutters, sensibly inclined, which carry to a common reservoir the liquid that drops from the cloths. Above the square is a reservoir that contains the liquid to be evaporated, which communicates with a series of conduits placed upon a line parallel with the suspended cloths; in each conduit there is a number of little syphons, sufficient to supply the cloths with moisture, in proportion as the evaporation that takes place causes the concentration of the liquid that drops from them.

When the whole is thus disposed, the air of the drying place is to be heated: which is to be done by creating a communication between the square and a current of air at forty degrees, tho volume and thickness of which is regulated according to the time in which it is desired to complete the evaporation.

My ventilating apparatus may be applied with much advantage in this process, since with a little fuel a considerable volume of air may be heated, and without resorting to any mechanical means, the quantity and velocity of the heated air that is introduced into the drying place may be augmented or diminished at pleasure. As I have already applied this method in the drying-houses of several manufactories, I can ascertain the expense of the fuel that is consumed by it.

In the first place, I am certain that the fire place of a ventilating stove of large dimensions cannot burn more than 200 kilogrammes of coals in twenty four hours; in the second place, experience has convinced me, that the heat which is evolved in these twenty-four hours with 200 kilogrammes of coals, is sufficient to dry 1200 pieces of cloth, containing each 4,800 kilogrammes of water. Now, if an almost absolute dessication of these pieces of cloth could produce only a part of the effect that would be obtained if the warm air had acted on cloths constantly wet, it is no exaggeration of the product to reckon it at 5,000 kilogrammes, which is the weight of the water that is evaporated in a drying house where a permanent moisture is kept up.

If, however, this result be compared with those that are obtained by processes which are looked upon as more advantageous, it will be found that in evapor-